

AMENDMENT TO THE CLAIMS

What is claimed is:

1. (Original) A scanning optical system for emitting a beam scanning in a main scanning direction, comprising:

a light source that emits the beam;

a line-like image forming optical system that converges the beam emitted by the light source in an auxiliary scanning direction which is perpendicular to the main scanning direction;

a polygonal mirror that rotates about its rotational axis to deflect the beam emerged from said line-like image forming optical system in the main scanning direction; and

an imaging optical system that converges the beam deflected by said polygonal mirror to form a beam spot scanning on a scan target surface in the main scanning direction,

wherein said line-like image forming optical system forms a line-like image extending in the main scanning direction in the vicinity of a reflective surface of said polygonal mirror,

wherein if the number of reflective surfaces of said polygonal mirror is less than or equal to six and if $|m| > 1.85$, the following condition (1) is satisfied:

$$r < 5\cos(w/2f)/[2|m|\{1-\cos(w/2f)\}] \quad \dots (1)$$

where r represents a radius of an inscribed circle of said polygonal mirror, m represents a lateral magnification of said imaging optical system in the auxiliary

scanning direction, f represents a focal length of said imaging optical system in the main scanning direction, and w represents half of a scanning width.

2. (Original) The scanning optical system according to claim 1,

wherein the following condition (2) is satisfied:

$$w/f > 0.70 \quad \dots (2).$$

3. (Original) The scanning optical system according to claim 1,

wherein if $N > 4$, the following condition (3) is satisfied:

$$wN/2\pi f > 0.55 \quad \dots (3)$$

where N represents the number of the reflective surfaces of said polygonal mirror.

4. (Original) The scanning optical system according to claim 1, wherein said imaging optical system has two lenses.

5. (Currently Amended) The scanning optical system according to claim 1,

wherein refractive power in an auxiliary scanning plane of a lens surface of said imaging optical system located nearest to the scan target surface is the largest of all lens surfaces of said imaging optical system,

wherein the auxiliary scanning plane is a plane which includes an optical axis of said imaging optical system and which is perpendicular to the main scanning direction.

6. (Original) The scanning optical system according to claim 1,

wherein a jitter amount is less than or equal to $5.0\ \mu\text{m}$, the jitter amount being defined as a distance between a position of a scan line and an ideal position of the scan line in the auxiliary scanning direction on the scan target surface.

7. (Original) The scanning optical system according to claim 1,

wherein when said polygonal mirror is situated such that a position at which the line-like image is formed lies on a reflective surface of said polygonal mirror, the beam reflected from said polygonal mirror proceeds along an optical axis of said imaging optical system.